

File SA13434  
Project 05CA27348

August 17, 2005

REPORT

ON

COMPONENT - CONTROLLERS, REFRIGERATION

Everex Communication Inc.  
Fremont, CA

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File SA13434 Vol. 1 Sec. 1 Page 1 Issued: 2005-08-17  
and Report

#### DESCRIPTION

##### PRODUCT COVERED:

USR, CNR Component - Air conditioning controller, Model m61

USR - Indicates investigation to the United States Standard for Temperature Indicating and Regulating Equipment, UL 873.

CNR - Indicates investigation to Canadian Standard CAN/CSA-C22.2 No. 24-93.

##### GENERAL CHARACTER:

This device is an open-type, solid-state, controller intended for use in Package Terminal Air Conditioner (applications). The assembly consists of a control circuit board and a user interface. This device incorporates a temperature sensing device and relay outputs to control external loads. It is supplied from a 24 Vac Class 2 transformer external to the control.

The primary function of the control is temperature regulation. This control has not been investigated for temperature limiting or safety applications.

##### RATINGS:

Inputs -

Type	Rating	Connector Designations
Supply	24 Vac maximum, 50/60 Hz, Class 2	J400, J401
Thermistor Probe Assembly	Class 2	1AT
User Interface	Class 2	J310

ILLUSTRATIONS - (Not for Field Representative Use. Engineering Use Only.)

Illustration 1 - Wiring Diagram  
Illustration 2 - Component Layout

File SA13434

Vol. 1

Sec. 1  
and Report

Page 2

Issued: 2005-08-17

## Outputs -

Designator	Output Loads	Connector Designations
Compressor (K302)	240 Vac, 60 Hz, 11.2 FLA, 42 LRA 277 Vac, 60 Hz, 10.3 FLA, 36 LRA minimum 30,000 cy, N.O.	Line 2 (J304, J305) & J306
Blower/Fan High (K303)	240 Vac, 60 Hz, 1.5 FLA, 5 LRA 277 Vac, 60 Hz, 1.5 FLA, 5 LRA minimum 30,000 cy, N.O.	Line 2 (J304, J305) & J307
Blower/Fan Low (K304)	240 Vac, 60 Hz, 1.5 FLA, 5 LRA 277 Vac, 60 Hz, 1.5 FLA, 5 LRA minimum 30,000 cy, N.O.	Line 2 (J304, J305) & J308
Reverse Valve (K305)	240 Vac, 60 Hz, 0.5 A 277 Vac, 60 Hz, 0.5 A minimum 30,000 cy, N.O.	Line 2 (J304, J305) & J309
Heater 2 (K301)	240 Vac, 60 Hz, 22.7 A 277 Vac, 60 Hz, 19.8 A minimum 30,000 cy, N.O.	Line 2 (J304, J305) & J303
Heater 1 (K300)	240 Vac, 60 Hz, 22.7 A 277 Vac, 60 Hz, 19.8 A minimum 30,000 cy, N.O.	Line 1 (J300, J301) & J302

Temperature - Maximum ambient, 60°C.

File SA13434

Vol. 1

Sec. 1  
and Report

Page 3

Issued: 2005-08-17

ENGINEERING CONSIDERATIONS (FOR ENGINEERING USE ONLY):

Use - For use only in products where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Conditions of Acceptability - When installed in the final use equipment, etc., the following are among the considerations to be made:

1. The suitability of the mounting means shall be determined in the end use.
2. The placement of this device within the equipment enclosure should be such that spacings between the live parts and the equipment are suitable for the particular application.
3. This device has been judged on the basis of the required spacings in the Standard for Temperature-Indicating and -Regulating Equipment, UL 873 Eleventh Edition, Table 32.1, Column D, dated December 22, 1994; and the Canadian Standard CAN/CSA-C22.2 No. 24-93, Table 3, Column D.
4. This device was not tested for any limiting or safety function.
5. The acceptability of connections, including temperature and secureness, shall be determined in the ultimate application.
6. The control is not provided with an enclosure. Suitable enclosure shall be determined in the end-use application.
7. The control was evaluated at an elevated temperature of 60°C.

File SA13434

Vol. 1

Sec. 1  
and Report

Page 4

Issued: 2005-08-17

#### CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following description:

Spacings -

#### ELECTRICAL SPACINGS:

Unless otherwise noted in this Report, the spacings in circuits rated 300 V or less between uninsulated live parts of opposite polarity and between uninsulated live parts and dead metal parts are not less than 1/8 in. (3.2 mm) through air, 1/4 in. (6.4 mm) over surface and 1/4 in. (6.4 mm) to the enclosure. For circuits rated 301-600 V, 3/8 in. (9.6 mm) through air spacings apply.

Conformal Coating - Recognized Component coatings for use on Recognized printed wiring boards (QMJU2) Dow Corning Corp., Type 3-1753; or Humiseal, Type 1C49LV, rated 105°C, 0.006 in. thick minimum.

Printed Wiring Boards - Unless otherwise specified, all printed wiring boards are Recognized Component printed wiring boards (ZPMV2) having a minimum operating temperature rating of 105°C. The maximum solder bath temperature and solder dip time shall be as Recognized.

Markings - All markings are either permanently ink-stamped, silk-screened, molded or provided on a Marking and Labeling System (PGDQ2).

The following markings are provided:

Recognized company's name, model number and date of manufacture.

All models in this section are eligible to bear the Canadian Recognition Mark. The use of this Mark indicates compliance with the requirements in the Standard for Temperature - Indicating and -Regulating Equipment, C22.2 No. 24-93. The mark and manufacturer's date code should be placed on the product or the smallest containers.

File SA13434

Vol. 1

Sec. 1  
and Report

Page 5

Issued: 2005-08-17

Internal Wiring - Unless otherwise specified, all internal wiring is Recognized Component appliance wiring material (AVLV2).

Soldered Connections - All soldered connections are made mechanically secure before soldering. When hand soldered, leads on printed circuit boards are bent over prior to soldering.

Exception - Printed circuit board assemblies that are wave soldered.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

File SA13434 Vol. 1 Sec. 1 Page 6 Issued: 2005-08-17  
and Report

Model m61 - FIG. 1

General - This photo shows an overall view of the Model m61. (Engineering Reference

only - Relays must have a minimum Class B insulation )

1. PCB - R/C (ZPMV2), See Construction Details. Overall dimensions 0.059 in. (1.5 mm) thick, 8.0 in. (203 mm) by 5.6 in. (142 mm). See Ill. 3 for Trace Layout.
2. Conformal Coating - R/C (QMJU2), See Construction Details. Provided on both sides of the printed wiring board. Edges and areas around connectors are not coated.
3. Compressor Relay, K302 - R/C (NLDX2), manufactured by Matsushita Electric Works, Model JTN1aS-PA-F-DC5V.  
  
Alternate - Same as above, except Omron Corp., Model G8P-1A4P-DC5.
4. Heater 1 Relay, K300 - R/C (NLDX2), Matsushita Electric Works, Model JTN1aS-PA-F-DC5V.  
  
Alternate - Same as above, except Omron Corp., Model G8P-1A4P-DC5.
5. Heater 2 Relay, K301 - R/C (NLDX2), Matsushita Electric Works, Model JTN1aS-PA-F-DC5V.  
  
Alternate - Same as above, except Omron Corp., Model G8P-1A4P-DC5.
6. High and Low Fan Relays, K303 & K304 - R/C (NLDX2), Matsushita Electric Works, Model JQ1aP-5V, rated 277 Vac, 1.5 FLA/5LRA.
7. Reverse Valve Relay, K305 - R/C (NLDX2), Matsushita Electric Works, Model JQ1aP-5V, rated 277 Vac, 1.5 FLA/5LRA.
7. Terminals - Quick connect, 12 provided, See Section General.



**Underwriters  
Laboratories Inc.®**

West Coast Division  
Santa Clara Office  
1655 Scott Blvd  
Santa Clara, CA 95050-4169  
USA  
www.ul.com  
tel: 1 408 985 2400  
Customer service: 1 877 854  
3577

File SA13434

Vol 1

Issued: 2005-08-17

Revised:

**FOLLOW-UP SERVICE PROCEDURE  
(TYPE R)**

**COMPONENT - CONTROLLERS, REFRIGERATION  
(SDFY2, SDFY8)**

Manufacturer: PRIME TECHNOLOGY (GUANGZHOU) INC  
(119619-001) 17/19 BAOYING NAN RD  
GUANGZHOU GUANGDONG CHINA

Applicant: EVEREX COMMUNICATIONS INC  
(131952-001) 5020 BRANDIN CT  
FREMONT CA 94538

Recognized Company: SAME AS APPLICANT  
(131952-001)

This Procedure authorizes the above Manufacturer to use the marking specified by Underwriters Laboratories Inc. only on products covered by this Procedure, in accordance with the applicable Follow-Up Service Agreement.

The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

The Procedure contains information for the use of the above named Manufacturer and representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. upon request.

This PROCEDURE, and any subsequent revisions, is the property of UNDERWRITERS LABORATORIES INC. and is not transferable.

UNDERWRITERS LABORATORIES INC.

A handwritten signature in black ink, appearing to read 'Sajeev Jesudas', is written over a horizontal line.

Sajeev Jesudas  
Chief Operating Officer

An independent organization working for a safer world with integrity, precision and knowledge



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File SA13434

Vol. 1

Sec. Gen.

Page 1

Issued: 2005-08-17

GENERAL

PRODUCT COVERED:

Component- Refrigeration Controls

GENERAL CONSTRUCTION:

Corrosion Protection - All parts of these devices are either constructed of corrosion resistant material or are plated or painted for protection against corrosion. Where corrosion protection is specified, all surfaces of the part are so protected, unless otherwise specified.

Dimensions - All dimensions are nominal unless otherwise specified.

TRADEMARK:

No trademark or trade name may be used to identify products in this Procedure in lieu of the company name.

FACTORY LOCATION AND IDENTIFICATION:

) No other factories for this volume.  
)

File SA13434

Vol. 1

Sec. Gen.

Page 2

Issued: 2005-08-17

TEST EQUIPMENT PROVIDED BY MANUFACTURER:

Dielectric Strength Test Equipment - 500 VA or larger transformer with sinusoidal wave form, with means for regulating and measuring output voltage, and means for detecting dielectric breakdown. The transformer may be rated less than 500 VA if the voltmeter is connected directly to the high voltage output.

TESTS PERFORMED BY MANUFACTURER:

DIELECTRIC WITHSTAND TEST

Devices to be Tested -

A. In all devices wherein the "Spacings" statement following "Construction Details" in the individual Procedure section indicates "1/16 in. through air and over surface" or "1/16 in." (alone), spacings shall be subjected to the tests indicated below.

B. Applicable Models -ALL

Tests - A potential of 1000 V plus twice rated voltage shall be applied for 1 min (or 20 percent higher for 1 s) between:

- A. Bare current-carrying and dead-metal parts,
- B. Bare current-carrying parts of opposite polarity, if any, and
- C. Bare current-carrying parts of line and low voltage circuits, if any.

Number of Devices Tested - May be 100 percent, or a quality control sampling method may be used. For large lots (100 production units or more), at least 2 percent are tested.

File SA13434

Vol. 1

Sec. Gen.

Page 3

Issued: 2005-08-17

QUICK CONNECT TERMINALS:

General - The following construction specification becomes effective November 15, 1996. This description supersedes any other descriptions of quick connect terminals in the following sections. All "female-type" or envelope quick connect terminals are either Listed or Recognized Component (RFBV2). All quick connect tab terminals employed in line voltage circuits are either (1) Listed or Recognized quick connect terminals (RFBV or RFBV2), or (2) comply with the following description.

Material - Shall be: (1) plated or unplated copper alloy (e.g. brass), (2) plated steel, (3) unplated steel of a corrosion-resistant alloy, or (4) brass.

Dimensions - Dimensions of all quick-connect tabs are specified below in Table 1 and Figs. 1A and 1B.

File SA13434

Vol. 1

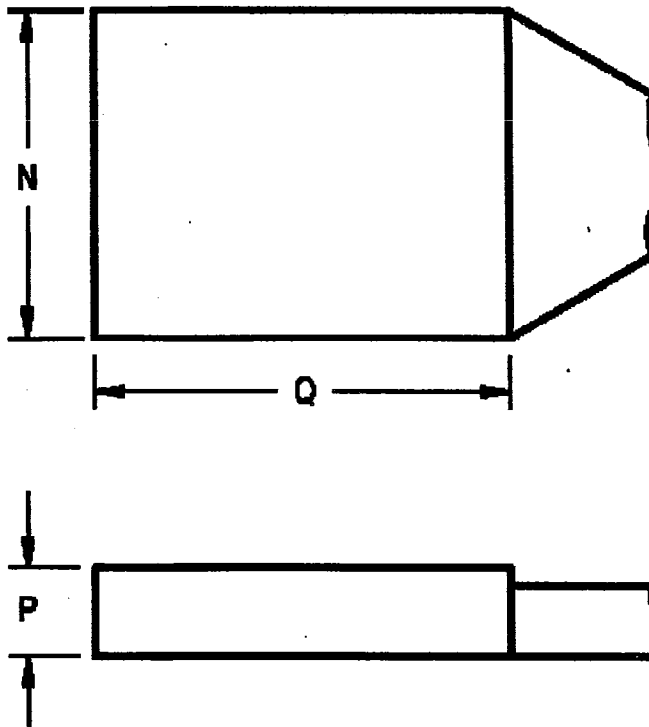
Sec. Gen.

Page 4

Issued: 2005-08-17

Figure 1.A

Envelope configuration for quick connect terminals



SB1281

Tab Width, Nominal Inches (mm)	N Maximum Inches (mm)	P Maximum Inches (mm)	Q Maximum Inches (mm)
0.250 (6.3)	0.320 (8.13)	0.140 (3.56)	0.370 (9.40)
0.205 (5.2)	0.270 (6.86)	0.140 (3.56)	0.315 (8.00)
0.187 (4.8)	0.270 (6.86)	0.140 (3.56)	0.315 (8.00)
0.125 (3.2)	0.180 (4.57)	0.140 (3.56)	0.290 (7.37)
0.110 (2.8)	0.180 (4.57)	0.140 (3.56)	0.290 (7.37)

File SA13434

Vol. 1

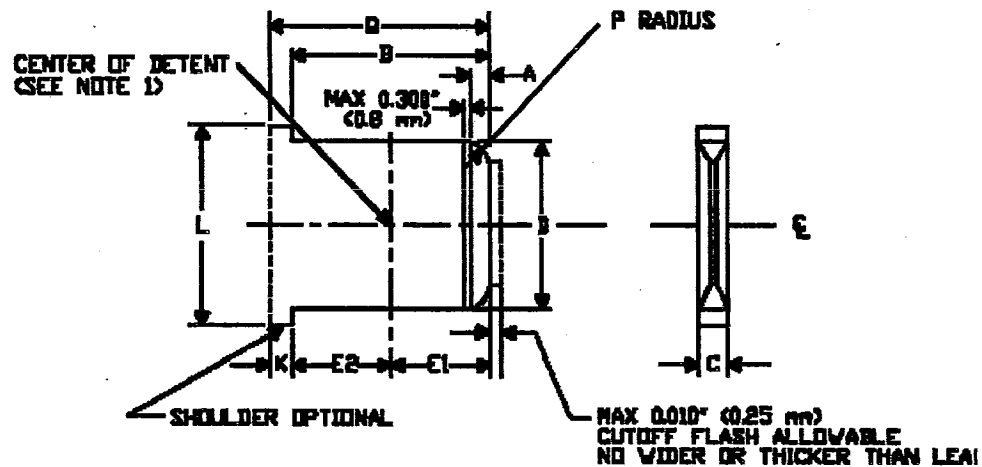
Sec. Gen.

Page 5

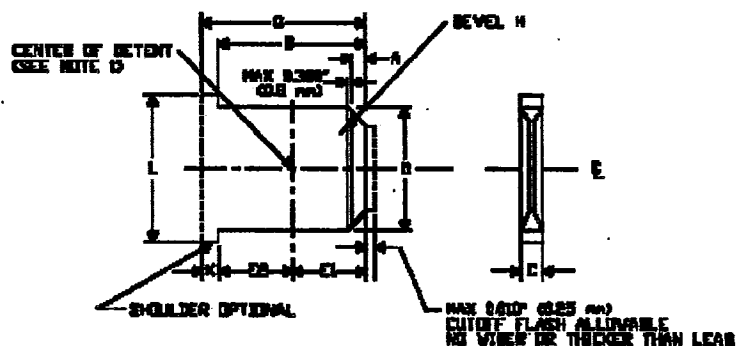
Issued: 2005-08-17

Figure 1.B

Dimensions of Terminals



SM1096A



SM1096B

Note 1 - For detent and hole dimensions F, G, M, and N see Figures 6.3 and 6.4.

Note 2 - Bevel "H" need not be a straight line if it is within the confines shown, or it may be a radius of "P."

Note 3 - "D" dimension is for tabs without shoulders.

Note 4 - "L" dimension not specified.

EV0000378

File SA13434

Vol. 1

Sec. Gen.

Page 6

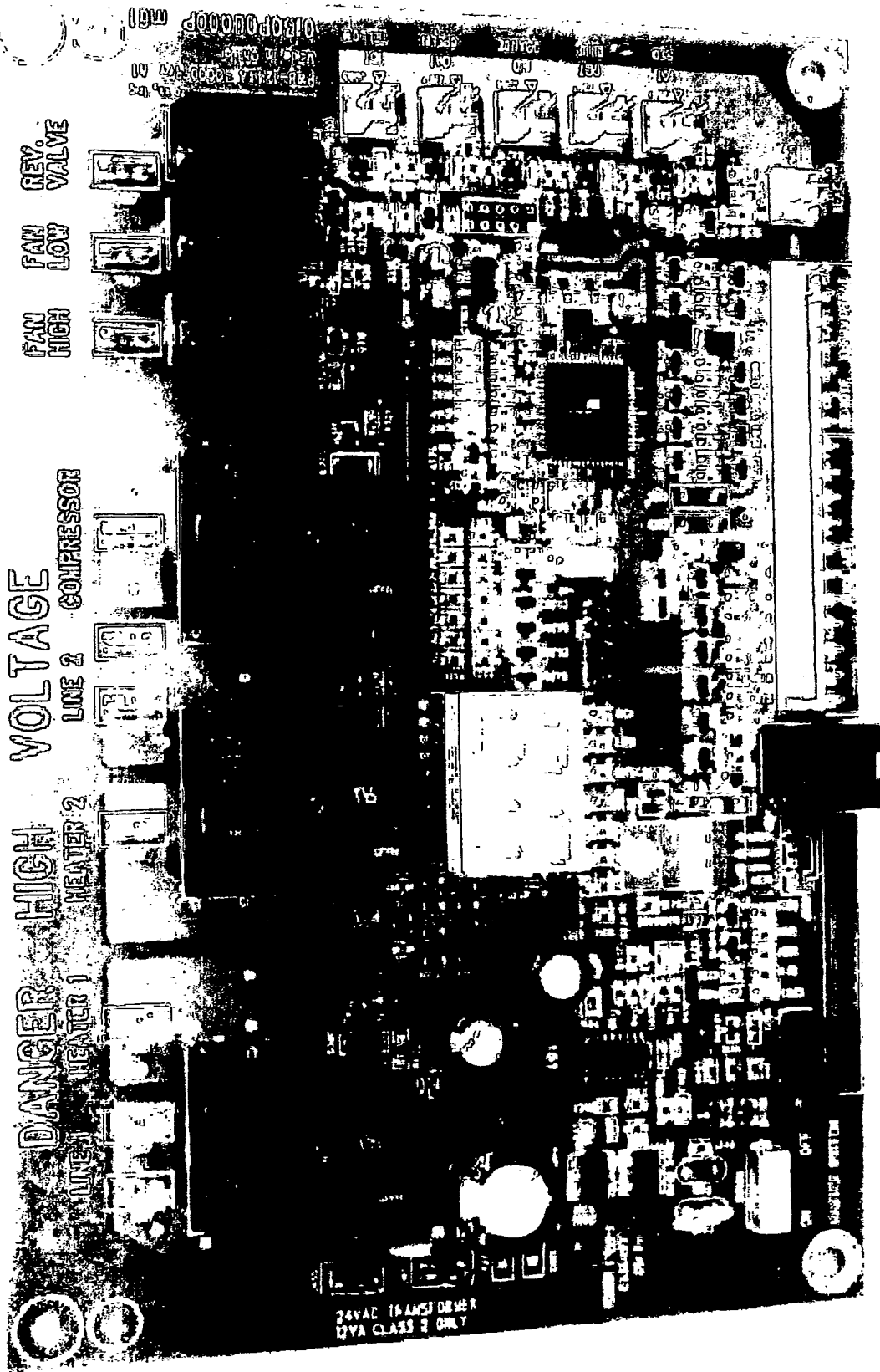
Issued: 2005-08-17

Table 1

Dimensions (mm)

Nominal size	A	B(min)	C	D	E1	E2	F	J	M	N	P	Q(min)
2.8 x 0.5 with dimple	0.6		0.54	2.90	1.8	5.61	1.3	12°	1.7	1.4	1.4	
	0.3	7.0	0.47	2.70	1.3	5.46	1.1	8°	1.4	1.0	0.3	8.1
2.8 x 0.5 with hole	0.6		0.54	2.90	1.8	5.61	1.3	12°			1.4	
	0.3	7.0	0.47	2.70	1.3	5.46	1.1	8°			0.3	8.1
2.8 x 0.8 with dimple	0.6		0.84	2.90	1.8	5.61	1.3	12°	1.7	1.4	1.4	
	0.3	7.0	0.77	2.70	1.3	5.46	1.1	8°	1.4	1.0	0.3	8.1
2.8 x 0.8 with hole	0.6		0.84	2.90	1.8	5.61	1.3	12°			1.4	
	0.3	7.0	0.77	2.70	1.3	5.46	1.1	8°			0.3	8.1
3.2 x 0.8 with dimple	0.6		0.84	3.25	1.8	5.61	1.3	12°	1.7	1.4	1.4	
	0.3	7.0	0.79	3.10	1.4	5.46	1.1	8°	1.4	1.1	0.3	8.1
3.2 x 0.8 with hole	0.6		0.84	3.25	1.8	5.61	1.3	12°			1.4	
	0.3	7.0	0.79	3.10	1.4	5.46	1.1	8°			0.3	8.1
3.2 x 0.5 with dimple	0.6		0.54	3.25	1.8	5.61	1.3	12°	1.7	1.4	1.4	
	0.3	7.0	0.48	3.10	1.4	5.46	1.1	8°	1.4	1.1	0.3	8.1
3.2 x 0.5 with hole	0.6		0.54	3.25	1.8	5.61	1.3	12°			1.4	
	0.3	7.0	0.48	3.10	1.4	5.46	1.1	8°			0.3	8.1
4.8 x 0.5 with dimple	0.9		0.54	4.80	2.8	3.89	1.5	12°	1.7	1.5	1.7	
	0.6	6.2	0.47	4.60	2.3	3.73	1.3	8°	1.4	1.2	0.6	7.3
4.8 x 0.5 with hole	0.9		0.54	4.80	3.4	3.25	1.5	12°			1.7	
	0.6	6.2	0.47	4.67	3.0	3.10	1.3	8°			0.6	7.3
4.8 x 0.8 with dimple	1.0		0.84	4.80	2.8	3.89	1.5	12°	1.7	1.5	1.8	
	0.7	6.2	0.77	4.60	2.3	3.73	1.3	8°	1.4	1.2	0.7	7.3
4.8 x 0.8 with hole	1.0		0.84	4.80	3.4	3.25	1.5	12°			1.8	
	0.6	6.2	0.77	4.67	3.0	3.10	1.3	8°			0.7	7.3
5.2 x 0.5 with dimple	1.0		0.54	5.30	2.8	3.89	1.9	12°	2.5	2.0	1.7	
	0.7	6.2	0.47	5.10	2.3	3.73	1.6	8°	2.2	1.8	0.6	7.3
5.2 x 0.5 with hole	1.0		0.54	5.30	3.4	3.25	1.9	12°			1.7	
	0.7	6.2	0.47	5.10	3.0	3.10	1.6	8°			0.6	7.3
5.2 x 0.8 with dimple	1.0		0.84	5.30	2.8	3.89	1.9	12°	2.5	2.0	1.8	
	0.7	6.2	0.77	5.10	2.3	3.73	1.6	8°	2.2	1.8	0.7	7.3
5.2 x 0.8 with hole	1.0		0.84	5.30	3.4	3.25	1.9	12°			1.8	
	0.7	6.2	0.77	5.10	3.0	3.10	1.6	8°			0.7	7.3
6.3 x 0.8 with dimple	1.0		0.84	6.40	4.1	4.14	2.0	12°	2.5	2.0	1.8	
	0.7	7.8	0.77	6.20	3.6	3.99	1.6	8°	2.2	1.8	0.7	8.9
6.3 x 0.8 with hole	1.0		0.84	6.40	4.7	3.48	2.0	12°			1.8	
	0.5	7.8	0.77	6.20	4.3	3.33	1.6	8°			0.7	8.9

NOTE – Included are dimensions for those nominal sizes corresponding with those found in the International Standard for Connecting Devices – Flat Quick-Connect Terminations for Electrical Copper Conductors – Safety Requirements, IEC 1210.





**RAUS**